

AP Biology Class Syllabus

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Online resources: masteringbiology.com

Course Description

AP Biology is designed to offer students a solid foundation in introductory college-level biology. The course is structured around the four big ideas, enduring understandings, and science practices that are defined by the AP Biology Curriculum Framework. Students will also develop advanced reasoning skills, such as designing a plan for collecting data, analyzing data, applying mathematical models, and connecting concepts in and across all domains of life. As students develop an appreciation for the study of life, they will be able to identify and understand unifying principles within a diversified biological world. Because our understanding of biology today is a result of inquiry, developing critical thinking skills through the process of inquiry is an important part of this course.

Course content will be presented via a combination of teacher lecture using PowerPoint, animated tutorials and video segments, classroom discussions, homework problems, internet investigations and simulations, online textbook software, and independent reading, outlining, and creation of vocabulary cards. Students will also conduct hands-on and inquiry-based laboratory investigations in small groups and complete lab write-ups individually. A summer assignment is used to review basic principles of science and to experience the expected rigor of the course.

Break Down of Expected Units

Summer Assignment

- Ch 1: Introduction-Evolution and the Foundations of Biology
- Ch 24-27: Evolutionary History of Life

Unit 1: Biochemistry Ch 2-3

- Chemical Context of Life
- Carbon and Molecular Diversity of Life

Unit 2: Cells Ch 4-5

- A Tour of the Cell
- Membrane Transport and Cell Signaling

Unit 3: Cell Metabolism Ch 6-8

- Introduction to Metabolism
- Cellular Respiration and Fermentation
- Photosynthesis

Unit 4: Cell Division Ch 9-10, 16

- The Cell Cycle
- Meiosis and Sexual Life Cycles
- Development, Stem Cells, and Cancer

Unit 5: Heredity Ch 11-12

- Mendel and the Gene Idea
- The Chromosomal Basis of Inheritance

Unit 6: Molecular Biology Ch 13-15, 17-18

- Molecular Basis of Inheritance
- Gene Expression: From Gene to Protein
- Regulation of Gene Expression
- Viruses and Genomes

Unit 7: Evolution Ch 19-23

- Descent with Modification
- Phylogeny
- Evolution of Populations
- Origin of Species
- Broad Patterns of Evolution

Unit 8: Plant Form and Function Ch 28-31

- Plant Structure and Growth
- Resource Acquisition, Nutrition, and Transport in Vascular Plants
- Reproduction and Domestication of Flowering Plants
- Plant Responses to Internal and External Signals

Unit 9: Animal Form and Function

Ch 32-33

- Homeostasis and Endocrine Signaling
- Animal Nutrition

Ch 34-35

- Circulation and Gas Exchange
- Immune System

Ch 37-39

- Neurons, synapses, and Signaling
- Nervous and Sensory Systems
- Motor Mechanisms and Animal Behavior

Unit 10: Ecology Ch 40-43

- Population Ecology and Distribution of Organisms
- Species Interactions
- Ecosystems and Energy
- Global Ecology Conservation Biology

Evaluation

The following work will be used to measure student performance in class throughout the year.

Tests and quizzes: A test will be given at the end of each unit and will always be announced in advance. Tests will be modeled after the AP test format. Questions will be primarily multiple choice with some short answer and will require students to exhibit analytical and critical thinking skills as opposed to just factual recall. Free-response questions will also be included on most tests and scored according to a scoring rubric. Students will be required to demonstrate good scientific reasoning in essay responses that include examples with their explanations. Periodic unannounced quizzes may also be given to make sure students are completing the necessary independent homework. Keep in mind you are preparing to take the ultimate cumulative test, the AP exam, at the end of the year! You must take this test to get the weighted grade for the class!

Labs: Inquiry-based lab opportunities will require students to design experiments, collect data, apply mathematical concepts, and refine testable explanations and predications. In each lab, students will generate and test a hypothesis, establish good controls, design and follow an experimental procedure, collect and analyze data, and formulate a clear conclusion summarizing their lab results. All responses should be written in the student's own words. These lab opportunities will encourage students to develop skills in communication, teamwork, and critical thinking, all of which are important not only for college labs but the rest of your life!

Homework: This class requires a lot of time and work OUTSIDE of class. Students will need to read and outline the chapters BEFORE coming to class. To keep up with vocabulary, students will need to make vocab cards. Other assignments will be given as needed to review concepts taught in class. A summer assignment will be given to review basic principles of science and to experience the expected rigor of the course. It is due the first day of school, without exception!

Online Assignments: The book comes with a CD and online resources that will be used both in and out of class. These include tutorials, internet investigations and simulations, and even practice tests. Students must have access to a computer and the internet in order to these helpful resources and complete the necessary assignments.

Grading Policy

- The grade for each report period will be computed by simple percent, using total points earned divided by total possible points per report period.
- Grade percentage range
 - A = 90 – 100
 - B = 80 – 89
 - C = 70 – 79
 - D = 60 – 69
 - F = 59 and below
- The course is weighted with an additional 1.0 Quality Point, provided students take the AP exam in the spring.

No late homework will be accepted for points at any time (with the exception of absences). This includes the summer assignment, which will be due the first day of class! You signed up for a college level course and are therefore expected to work at that level throughout the year. Deadlines and due dates will be strict throughout the course. However, it is still in your best interest to turn in late work, even if not for a grade because:

- You can still gain knowledge from the completed material which is necessary for tests, quizzes, and the AP exam.
- Work that is gone over in class could still be corrected on your late work, again improving your success in the class.
- I will take away the “missing” as your grade in the gradebook and replace it with a “1.” These “points” could be used at the end of the grading period to bump you up if needed, but you should not rely on them to drastically change your grade!

The AP Biology Exam

- All students enrolled in the class must take the Advanced Placement Exam which will be administered in the spring. Parents/Guardians/Students are required to pay the fee for the Advanced Placement Exam. Students who earn a passing score, as determined by the College Board, will be reimbursed for the cost of the Advanced Placement Exam, upon submitting a copy of the passing score record and a copy of the cancelled check or receipt proving payment.
- Students who take the Advanced Placement Exam will be exempt from completing a final exam in the course.
- Students who take the Advanced Placement Exam will have a weighted letter grade assigned to them: five (5) points for an “A”, four (4) points for a “B”, three (3) points for a “C”, two (2) points for a “D”, and zero (0) for an “F”.
- The exam includes a section of multiple-choice questions along with a short answer/free-response section. Unit tests given throughout the year are formatted similar to the AP exam.
- Successful scores on the AP exam may allow students to earn college credit for an introductory laboratory science course.

Class Expectations

- Come to class! This class will prepare you for the content, rigor, and labs taught in college level science courses, so if you expect to truly comprehend the material, your attendance is very important.
 - Be on time.
 - Be responsible about any class time you do miss (see Make Up Work below).
 - On days where some students are given the option of a delayed start (due to Keystone testing, etc), you are **REQUIRED** to be in this class during its scheduled time.
- Be prepared. Read the assigned text **BEFORE** coming to class. Make sure you have your notebook and assignments with you before the late bell rings.
- Exhibit common courtesy. When I am speaking, you should be listening and taking notes as needed.
 - Cell phones should **NOT** be out while in the classroom...EVER! Turn them off and put them away!

Make Up Work

- Make up work is the responsibility of the students. Students are to see me during HOMEROOM to determine what was missed.
- Work assigned when a student is present will be due the day the student returns to class. When they return, they will also be given all missing classwork and homework to make up according to the specified timeline, which will depend on how many days were missed.
- If a student is not in class but is in school, any assignment due that day should be turned in that day.
- If a student is absent the day of a quiz or test, it is to be made up the day he/she returns. If a student is absent the day before a quiz or test, it is still to be taken on the regularly scheduled day.
- If a student knows ahead of time they will be absent, such as for a field trip, sporting event, or vacation, they must see me ahead of time to get the missing assignments.
- Note: If students do not turn in an excuse and get their agenda stamped within 3 days of their absence, any work assigned or due the day they were absent will be a zero.

Suggestions for a Successful Year

- **DO NOT PANIC!** The hardest part of a college level science course is learning how to study a tremendous amount of information in a limited amount of time. Read the text, but focus on the concepts and themes that are presented in lecture.
- **DO NOT PROCRASTINATE!** It is vital that you devote time each night (30-45 min) to reading the text and reviewing your notes. Regardless of your ability to memorize, it is impossible to **understand** large amounts of information without spending time on it. Don't cram! Do not let large assignments like lab reports creep up on you. Keep up with other written assignments as well. Not only does it count for points, but it is designed to reinforce what is learned in class. I do not believe in giving you busy work!
- **ASK QUESTIONS!** I cannot help you if I do not know you need help. I am also here before and after school, and we can set up meeting times, but don't expect me to get you out of another class. Study groups are highly encouraged as well. Sometimes the best way to learn is by trying to teach someone else what they do not understand.

Parental/Student Signature Form for AP Biology

To demonstrate that you have read through and understand the responsibilities of this AP Biology class, please sign below. Take this course syllabus home and ask your parents/guardians to review the contents, fill out their contact information, and sign below as well. Carefully remove this page from your syllabus and return it to me by the next school day.

Print Student Name: _____

Student Signature: _____ Date: _____

Print Parent/Guardian Name: _____

Parent/Guardian Signature: _____ Date: _____

Parent/Guardian Contact Information:

Name and relationship to student _____

Home phone _____

Cell phone _____

Work phone _____

Email address _____